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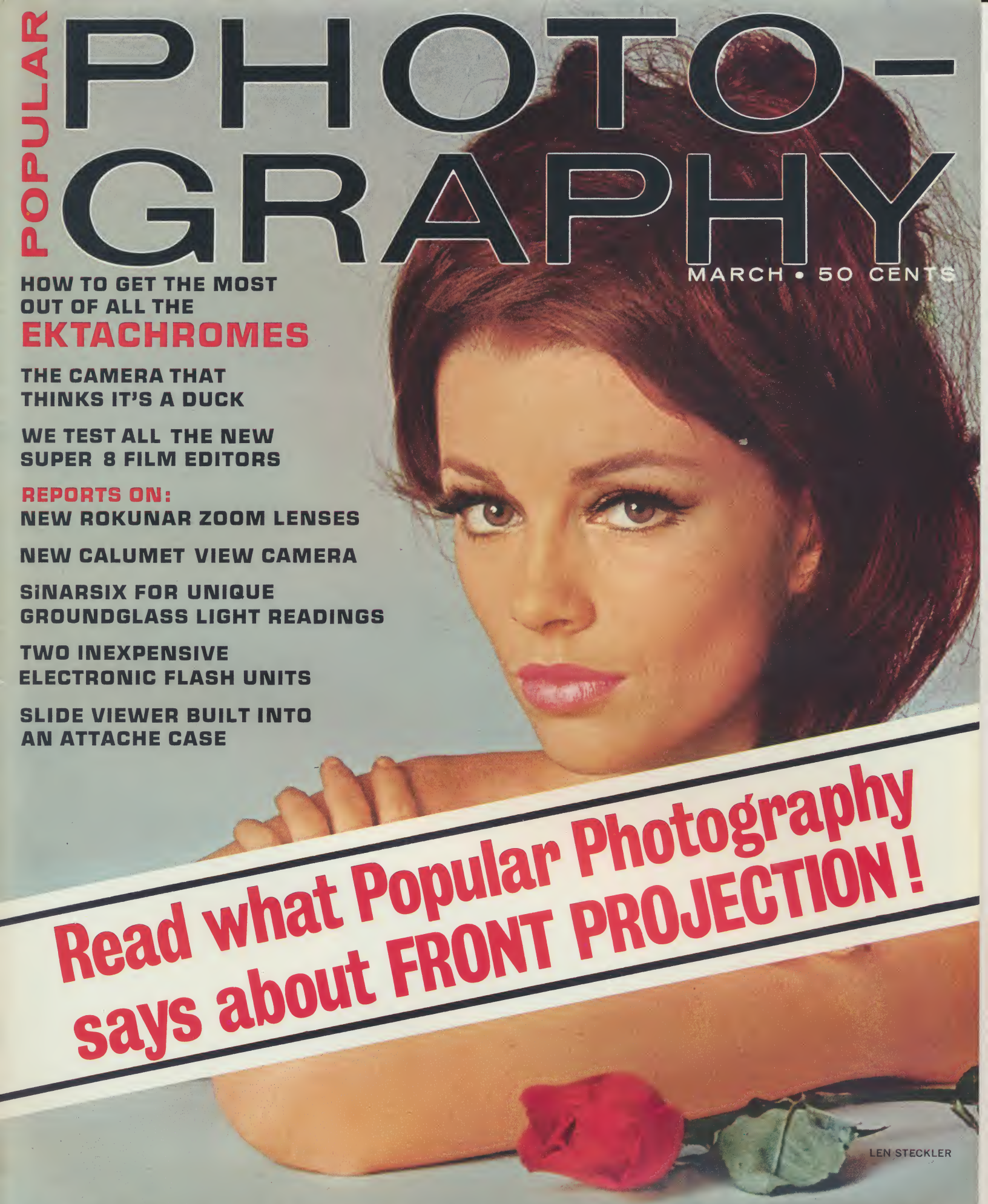


Read what Popular Photography says about FRONT PROJECTION!

LEN STECKLER

VIETNAM: THE LONELY, TOUGH, DEADLY ASSIGNMENT

HOW TO MOVE THE GRAND CANYON AND OTHER PHOTOGRAPHIC FEATS

All the world's a background today for studio photographers who now can put the Grand Canyon, the Matterhorn, or the Eiffel Tower inside their four walls simply by changing a transparency. The remarkable technique that makes this possible is Front Projection, a radical new system that promises to make big changes in studio photography.

Photographers can now pick their locations and even the time of day and weather without leaving their studios to get exotic backgrounds for fashion, exciting sets for advertising illustrations, or portraits in symbolic surroundings. Motion pictures, television, and other media now have a new dimension within their reach.

What's more, the Front Projection Corporation's Professional Model requires no more space than the simplest studio setup that could possibly be used with the same subject. The price for the entire unit with screen ranges from $4,200-$5.000, but a smaller version is expected in March that will sell for less than $2,000.

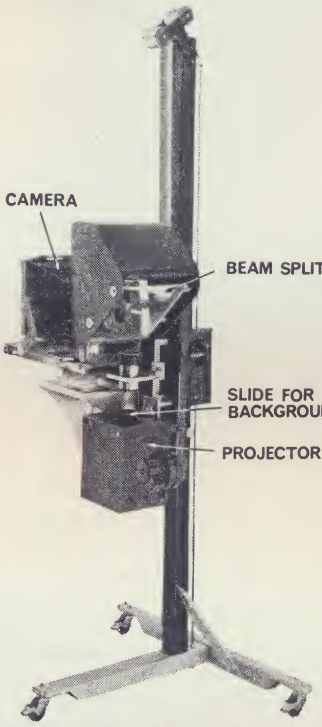
The idea for Front Projection began several years ago with the premise that all of the commonly known background techniques started on the wrong foot. They were all bulky, complicated, expensive, and required much extra space just to house the projection equipment in addition to the normal shooting space (about three times the space required by conventional sets).

Several men began wondering why the background could not be projected from the camera rather than from behind a translucent screen (rear projection), and the race was on with Sherman Fairchild as one of the foremost pioneers.

By projecting the background from the front, all the benefits could be enjoyed in studio spaces barely large enough for the simplest setups. The projected backgrounds, in effect, had to be on the same optical axis as the camera lens to keep the subject from casting a shadow anywhere that would show on the background, but with a little optical sleight-of-hand this was made possible.

For the picture of the girl jumping into the Grand Canyon (see color spread) we placed the camera where it would normally be to photograph a model jumping in the air. Then we put a slide into the projector (in front of the camera at a right angle to the camera axis). A beam splitter (this transmits as well as reflects light) in front of the camera lens made the projected image of the canyon behave as if it were coming from the camera lens instead of a separate projector. Of course, there's much more to it than that, so don't rush to your slide projector for a do-it-yourself project.

Naturally, the Grand Canyon image was brighter on the subject than on the background since the model was closer to the camera-projector and the screen farther away. But the trick occurs in what the model and the screen did when the light hit each of them. White reflects much light, but compared to a mirror that reflects the source back in your eyes, even the brightest white is very dark. That is about what happens with the screen used in the front projection system. It isn't a mirror, of course, but it does reflect a mirror-bright image back into the camera lens.



FPC Professional Model can be used with cameras from 35-mm to 8x10. Groundglass-focusing types work best.

This special screen is called a collimating Retro-Reflex screen; it has the unique ability to reflect light directly back to its point of origin with almost no light loss. But unlike an ordinary mirror that reflects light back toward its source only when that source and the mirror are in the proper angular relationship, the front projection screen reflects it back to the source regardless of the angular relationship (up to about 60 degrees).

There are well over a million tiny glass beads in each square inch of the screen with each one acting like just such a mirror. The result is the brightest reflective surface ever developed, with the image reflected back to the camera 900 times as bright as from the whitest white. With so bright a screen image, any ordinary subject in front of the screen appears as a silhouette by comparison, and whatever projected image falls on the subject is simply lost for all practical purposes.

Conventional electronic flash or incandescent studio lights can then be used to illuminate the subject, just as in any ordinary studio setup. Naturally, some of that light is going to spill over on the screen, but the screen reflects the light back only to the source. Since the camera lens is not the apparent source of this light, it does not see the reflection of it from the screen but only that part of it reflected by the subject.

The reflection from the screen is so directional that when standing next to the camera, you cannot accurately judge the combined image. Even with that small difference in viewing angle, it is likely to look like a very diluted image; but step behind the camera (preferably one of the groundglass type) and the scene comes to life.

The screen is not perfect, so it is best to keep as much of this subject light off it as possible. But even if you are careless in that regard, probably the worst effect you would get would be some desaturation of the background color, particularly in shadow areas.

Still, the tremendous savings in cost, space, and projection intensity (this system requires less than 10 percent the projector brightness demanded by rear screen systems) are only a part of the story. With rear projection systems, it is virtually impossible to obtain even illumination from center to edge. Light generally goes in a straight line and that's fine for the center of the screen, but near the edge that straight line will miss the camera lens by a country mile. Not so with the front projection screen, for it just bounces the light back to where it came from, whether it struck the center or the farthest corner.

This brings up another feature unique to the system. To avoid background distortion with a rear projection setup, the camera must shoot straight at the screen (in a 90-degree relationship). But again, this is not so with front projection. True, if you projected from off-center, you would have a keystone-shaped image on the screen

Great outdoors in any season can be brought into studio to create ads such as these two.

when viewed from straight-on, with attendant linear distortion, converging lines, tilting buildings, and such. But since the projector and camera are effectively in the same position, the camera lens sees exactly the same background image that the projector puts on the screen.

So the camera-projector unit can be tilted up or down, or even swung from side to side with relation to the screen without making the slightest difference in background perspective. And by using some swings and tilts on the projector, you can even correct if there are errors in the background shot.

The system is like a projector that you can mount any camera on, for that's about the way it works. It is easier if you use a camera with groundglass focusing (through the taking lens), for that eliminates any parallax that would make it difficult to judge the combined foreground-background balance visually. But the same basic unit may be used interchangeably with any number of different cameras from 35-mm to 8x10, just by changing the spacer blocks that bring the lens for the particular camera into the correct optical alignment.

Directly in front of the camera lens at a 45-degree angle is a beam splitter, and Front Projection puts the background projector directly under that. The splitter really isn't used as such, but rather as a mixer that reflects the projected image on the same axis as that of the camera lens. This is a very ticklish alignment (and a good reason why you could easily spend more trying to outguess them with a homemade unit than the cost of a complete factory unit), because even the nodal points of the taking and projection lenses must appear to coincide if you don't want galloping shadows as the subject moves back and forth in front of the screen. But with Front Projection, it is possible for any photographer with reasonable know-how to juggle optics on his camera(s) or projector to his heart's content and still keep the shadow hidden behind the subject.

The projector will show either 35-mm or 2¼-square transparencies. The prolonged high-intensity usage demanded of this system (even though far less than for rear projection) required the development of a very special projection system. Starting with a 650-watt, 3200 K, high-efficiency quartz-iodine bulb, the light is passed through a complex system of four condensers, a dichroic filter (which transmits less than 20 percent of the infrared but more than 92 percent of the useful light), plus a conventional heat absorber. This is more than enough to keep any transparency cool, but as an added precaution, a blower is built in. The result is that less than 1% of the heat reaches the transparency.

Of course, in some cases incandescent light just won't do the job, and for those there is speed-light projection. FPC has developed a lollipop-shaped flash tube that is installed directly below the quartz-iodine bulb and can be connected to most electronic flash power packs of up to 2400 watt-seconds. By using electronic flash to light the subject as well as the projector, all the advantages of front projection can be extended even into stop-action situations where it is necessary or desirable to work with models in motion.

The basic unit, known as the FPC Professional model, includes the adjustable camera shelf, projector with two projection lenses, 9-foot monopost, and 12x12-inch beam-splitter box. It sells for $3,650, and is not available for leasing or rentals. A smaller and more simplified version (the Portrait Background System) is expected soon, to be priced at $1,500. The Retro-Reflex screens range in price from $312 for a 6x8-foot to $2,437.50 for a 15x25. Other accessories are available; for further information and demonstrations, write to Front Projection Corporation, 404 Park Ave. S., New York, N.Y. 10016.—

Front Projection system *lets you bring Grand Canyon, cloud bank, steel mill, or any other scene on transparency into studio where you can pose subject against it. Model was shot with Hasselblad and three electronic flash units.*

HOW TO PUT THE GRAND CANYON IN A STUDIO

By JAMES S. FORNEY

Photographs by the author

A Word from Front Projection Corporation:

"Read what users have told us about their experiences..."

"In three days time, we shot nine different motors in nine different 'locations' at a photographer's studio right here in Detroit. To have actually shot these situations on location from coast to coast would have taken from three weeks to a month . . . weather permitting . . . and, as you can imagine, a great deal of money. While cost is always an important factor, time was even more important in our case and we were easily able to meet our deadline through use of Front Projection.

Obviously, when you meet your deadlines in such good order and do it with a minimum of expense, you're making a friend of the client. When the catalogue turns out to be a beauty, they are doubly happy. Such is the case with our good friend and client the Chrysler Outboard Corporation."

***Photography by Kermit Johnson**

John T. Wheeler
Senior Vice President
and Group Account Supervisor
Ross Roy Inc.
Advertising Agency, Detroit

"Our experience with your Front Projection System has been most stimulating. It has opened a new dimension to our approach to Studio Photography and has excited our clients into new thinking for their advertising campaigns. With this new and dynamic tool we have increased in value to our customers as well as expanding our own business."

W. A. Johnson
Director of Photography
Artists Inc., Chicago

"At REX CHAINBELT we are very enthusiastic about the photography results achieved using the FRONT PROJECTION Background System for some of the executive photos featured in our 1965 Annual Report. In our report this year we decided that the "BUSINESS WEEK" Magazine cover photo technique, showing our key divisional vice presidents with one of their particular product lines at work in the background, would be the most representative way to portray our management team and the typical markets and products with which they deal on an every day basis. Staging these photos in the field – and taking our executives to the suitable job sites at the particular time we needed these photos – would have been extremely impractical and expensive. The use, therefore, of the FRONT PROJECTION Background System at a local photographer, Pohlman Studios in Milwaukee, not only saved us time and costs but also gave us a high caliber of photography we probably couldn't have achieved in the field. This system definitely provided the exact effect in our photos for which we were striving. I can safely state that we are planning to take advantage of this same, unique photographic process many times in the future."

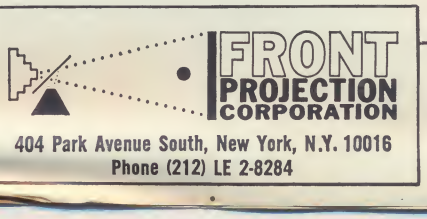
G. Herbert Pfeifer
Director, Marketing Services
and Communications
Rex Chainbelt Inc., Milwaukee

"Here's where Front Projection really paid off – eight out of ten potential customers who walk into our studio are now buying our pictures, whereas previously, without Front Projection equipment, we only sold four out of ten customers.

And in addition to doubling the number of customers, we also doubled the number of reorders once they saw how beautifully the pictures came out – the backgrounds even show through the lace mantillas and veils.

The way business has boomed since we bought Front Projection equipment, we should be able to pay off the entire cost of the equipment in about two or three months."

Clem Ida
Ida Art Studios, Brooklyn



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